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REMARKS

Applicants have amended their claims in order to further clarify the definition of various aspects of the present invention. In particular, Applicants have incorporated the subject matter of claim 15 into claim 9. In view thereof, claim 15 has been cancelled without prejudice or disclaimer. Moreover, Applicants have cancelled claims 21 and 22 without prejudice or disclaimer.

Initially, Applicants note that in the Office Action mailed March 6, 2003, the Examiner has not set forth a basis for rejection of claim 9, notwithstanding that the Examiner has indicated that claim 9 is pending (note Item 1 on page 2 of the Office Action mailed March 6, 2003). Based thereon, it is respectfully submitted that if the Examiner maintains any rejection of the claims that includes rejection of claim 9, the Examiner must issue a clear basis for rejection of claim 9, in a new, non-Final Office Action. At the very least, the Examiner must indicate a basis for rejection of claim 9, with reasons for such rejection, in a new, non-Final Office Action. See 35 USC §132.

Of course, upon issuing a new, non-Final Office Action, setting forth a basis for rejection of, inter alia, claim 9, the amendments herein must be entered.

In any event, it is respectfully requested that the present amendments be entered, notwithstanding finality of the Office Action mailed March 6, 2003. In this regard, noting canceling of claims 21 and 22, as well as incorporation of subject matter of claim 15 into claim 9, which are amendments being made in the present Amendment, it is respectfully submitted that these amendments do not raise any new issues, including any issue of new matter. Moreover, particularly noting that by

incorporating the subject matter of claim 15 into claim 9, various aspects of the present invention are being further defined, it is respectfully submitted that the present amendments materially limit any issues remaining in the above-identified application; and, at the very least, present the claims in better condition for Appeal. Clearly, by canceling claims 21 and 22, the rejections set forth in Items 2 and 5 on pages 2, 3 and 5 of the Office Action mailed March 6, 2003, have been obviated, clearly limiting issues remaining in connection with the above-identified application. Moreover, noting the new bases for rejection of claims in the Office Action mailed March 6, 2003, as well as further arguments by the Examiner therein, it is respectfully submitted that the present amendments are clearly timely.

In view of all of the foregoing, it is respectfully submitted that Applicants have made the necessary showing under 37 CFR § 1.116(c); and that, accordingly, entry of the present amendments is clearly proper.

Applicants respectfully submit that all of the claims now presented for consideration by the Examiner patentably distinguish over the teachings of the references applied by the Examiner in rejecting the claims as formerly in the application, that is, the teachings of the U.S. Patents to Otsuka, et al., No. 4,579,223, and to Cerbo, No. 3,969,224, and International (PCT) Publication No. WO 95/13135 (McKedy), under the provisions of 35 USC §102 and 35 USC §103.

Initially, it is noted that claims 21 and 22 have been cancelled. Accordingly, it is respectfully submitted that the rejection of claim 22 under 35 USC §102(b) in Item 2 on

pages 2 and 3, and the rejection of claim 21 under 35 USC §103 as set forth in Item 5 on page 5, of the Office Action mailed March 6, 2003, are moot.

As to the claims remaining in the application, it is respectfully submitted that these applied references would have neither disclosed nor would have suggested such a process for producing an oxygen-absorbing package as in the present claims, including, inter alia, removing fine iron powder passing through a 200-mesh standard sieve such that this fine iron powder remains in the oxygen-absorbing composition in an amount of 5% by weight or less; and packaging the oxygen-absorbing composition in an air-permeable packaging material using a three-sided automatic filling-packaging machine of rotary filling type in a high productivity of at least several hundred packages per minute. Note claim 9.

In addition, it is respectfully submitted that these references would have neither disclosed nor would have suggested such a process as in the present claims, having the features as discussed previously in connection with claim 9, and including additional features as in the remaining, dependent claims, such as (but not limited to) wherein the iron powder is a sponge iron powder (see claim 10); and/or wherein the granular iron powder is a coated iron powder prepared by coating an iron powder with an electrolyte in an amount of 0.1 to 10% by weight based on the weight of the iron powder (see claim 11), particularly wherein the coated iron powder is produced by first coating iron powder and then removing the fine iron powder (see claim 12), or by first removing the fine iron powder, leaving the remaining iron powder, and then coating the

remaining iron powder (see claim 13), with the remaining coated iron powder being further treated by further removing fine iron powder again, after the coating (see claim 14); and/or wherein the removal of the fine iron powder is conducted by a screening or separation method utilizing gravity or centrifugal force (see claim 16); and/or maximum amount of iron powder attached to an outer surface of the oxygen-absorbing package as in claim 17; and/or further definition of amount of fine iron powder passing through a 200-mesh standard sieve in the granular iron powder, as in claim 18; and/or average particle size of the granular iron powder as in claim 19; and/or amount of coarse iron powder having a diameter larger than 500 μm in the granular iron powder, as in claim 20.

The present invention is directed to a process of forming an oxygen-absorbing package, including inter alia, filling an oxygen-absorbing composition in an air-permeable packaging material. This process is particularly appropriate for industrial production of the package, and is especially useful for forming such package, of an iron powder-based oxygen-absorbing composition within an air-permeable packaging material, using a three-sided automatic filling-packaging machine of rotary filling type in relatively high speed packaging. The oxygen-absorbing package can be used in various preservation techniques, for example, for preserving foodstuffs, beverages, cosmetics, pharmaceutical products, etc.

Oxygen-absorbing compositions containing an iron powder have been extensively used to remove oxygen in preserving various oxygen-sensitive products. However, in industrial processes of packaging such oxygen-absorbing composition,

using an automatic filling-packaging machine of high productivity, the oxygen-absorbing composition is likely to attach to the outer surface of the packages, causing deterioration in package appearance and posing safety and hygiene problems. Moreover, the oxygen-absorbing composition, after filling, may be sandwiched at a location of a sealing portion of the bag opening, thereby causing deterioration in both appearance and sealing strength. Such misplaced oxygen-absorbing composition occurs when, for example, upon filling the package, the composition bounces back (e.g., scatters) up toward the opening of the bag.

While it has been proposed to carefully control operating conditions of the automatic filling-packaging machine and/or to clean the outer surface of each package with a brush or cloth, to avoid undesirable attachment of the oxygen-absorbing composition, these methods are laborious and costly, and, moreover, fail to produce satisfactory results.

Against this background, the present inventors have made extensive researches on the relationship between the scattered amount and particle size of the iron powder, and, in view thereof, provide the present invention which avoids problems of scattering of the oxygen-absorbing composition to undesired locations on the packaging material. Applicants have found that by utilizing an oxygen-absorbing composition including a granular iron powder which contains fine iron powder passing through a 200-mesh standard sieve in an amount of 5% by weight or less by removing the fine iron powder, and by packaging using a three-sided automatic filling-packaging machine as in the present claims, problems as discussed in the foregoing, arising in connection with prior

art techniques, can be avoided. That is, by removing the fine iron powder such that the granular iron powder contains fine iron powder passing through a 200-mesh standard sieve in a maximum amount of 5% by weight, and by packaging using a three-sided automatic filling-packaging machine as in the present claims, scattered iron powder, for example, on the outer surface of the package, can be reduced, for example, to an amount of 0.5 mg/m^2 or less with respect to the surface area of the oxygen-absorbing package.

Thus, as described in the paragraph bridging pages 12 and 13 of Applicants' Specification, through application of the present process, including in particular the specified removing of fine iron powder of the recited mesh size, and using the recited three-sided automatic filling-packaging machine as recited in the present claims, the iron powder can be prevented from bouncing up in the form of dust and attaching to the outer surface of the package, at the time of the filling operation of the oxygen-absorbing composition. Using the oxygen-absorbing package formed by the present process, products can be preserved for long periods of time without contamination and color change; and, in particular, the oxygen-absorbing package formed according to the presently claimed process can suitably be used for preserving products, such as foodstuffs, beverages, cosmetics, etc., containing substances which form adducts with iron.

McKedy discloses an oxygen absorber composition for absorbing oxygen primarily in ambient temperature dry environments. The composition includes in relatively sufficient proportions particulate annealed electrolytically reduced iron, salt for

combining with water to produce an electrolyte which combines with the iron to cause it to absorb oxygen, and a water-supplying component comprising activated carbon with liquid water therein for supplying the water to the salt to produce the electrolyte. See the paragraph bridging pages 2 and 3 of McKedy. This patent document further discloses that the particulate annealed electrolytically reduced iron which is used in the composition can be of a size of between about 50-mesh and 325-mesh, and more preferably between about 100-mesh and 325-mesh and most preferably about 200-mesh. See page 5, lines 15-19. Note also, page 5, lines 28-32. This patent document further discloses that, generally, the finer the particulate iron which is used, the speedier will be the oxygen-absorption. Thus, 325-mesh iron and above is preferred from a theoretical standpoint. However, the fineness may be limited by the use of the machinery which is utilized to fabricate, inter alia, the packets. See page 25, lines 18-23.

It is respectfully submitted that McKedy is primarily directed to the oxygen-absorbing composition per se, disclosing desirability of using relatively fine particulate iron. It is respectfully submitted that McKedy would have neither disclosed nor would have suggested, and in fact would have taught away from, producing the iron-absorbing composition comprising a granular iron powder which contains fine iron powder passing through a 200-mesh standard sieve in an amount of 5% by weight or less by removing the fine iron powder (i.e., passing through the 200-mesh sieve).

In particular, it is respectfully submitted that McKedy teaches away from removing the fine iron powder passing through a 200-mesh standard sieve. Particularly

in view of the disclosure in McKedy of use of iron to about 325-mesh, and the most preferred particulate being 200-mesh, it is respectfully submitted that McKedy would have neither taught nor would have suggested the removal of the fine iron powder passing through a 200-mesh sieve according to the present invention.

Furthermore, it is emphasized that problems solved by the present invention arise particularly in connection with use of automatic filling-packaging machines, such as three-sided automatic filling-packaging machines. It is respectfully submitted that McKedy does not disclose, nor would have suggested, use of such automatic filling-packaging machine. It is respectfully submitted that McKedy does not disclose, nor would have suggested, problems addressed by the present invention, or the solution of such problems including the removal of fine iron powder, achieving advantages as described in Applicants' original disclosure.

In addition, it is respectfully submitted that McKedy would have neither taught nor would have suggested the other aspects of the present invention as discussed in the foregoing.

It is respectfully submitted that the additional teachings of Otsuka, et al. would not have rectified the deficiencies of McKedy, such that the presently claimed invention as a whole would have been obvious to one of ordinary skill in the art. Otsuka, et al. discloses an oxygen absorbent packet employing a double packaging material, the packet including oxygen absorbent packaged and sealed in a double packaging material comprising a gas-permeable outer material layer comprised of a plastic film or transparent paper, a gas-permeable sealing layer, a gas-permeable inner material layer

comprised of paper or non-woven fabric, a gas-permeable sealing layer, and an air layer between various of the layers. See column 2, lines 44-52. Note also column 4, lines 34-36. This patent further discloses that the oxygen absorbent package is generally produced by means of a three-side sealing method or a four-side sealing method, and describes that a three-side sealing automatic filling and packaging machine or other means, or a four-side sealing automatic filling and packaging machine, can be used. See column 6, line 62 to column 7, line 17.

It is noted that Otsuka, et al. does not describe the problem addressed by the present invention, or solution to the problem as provided by the present invention.

Even assuming, arguendo, that the teachings of McKedy and Otsuka, et al. were properly combinable, such combined teachings would have neither disclosed nor would have suggested the presently claimed subject matter, including wherein the oxygen-absorbing composition is produced by a technique including removing fine iron powder such that the granular iron powder contains the fine iron powder passing through a 200-mesh standard sieve in an amount of 5% by weight or less, and, e.g., then packaged in a three-sided automatic filling-packaging machine as in the present claims; or, in combination therewith, the other aspects of the present invention as discussed in the foregoing.

With respect to claims 12-14 and 16, it is respectfully submitted that the additional teachings of Cerbo would not have rectified the deficiencies of the combined teachings of McKedy and Otsuka, et al., such that the presently claimed invention as a whole would have been obvious to one of ordinary skill in the art.

Cerbo discloses a method and apparatus for separating particles having different physical characteristics. In one illustrative embodiment, a stream of particles having different masses and magnetic characteristics is continuously fed into a rotary receptacle. The receptacle is rotated at a speed sufficient to centrifugally project the particles therefrom and form an umbrella-like array, the particles being projected over different distances proportional to their masses and are collected in separate cylindrical receiving bins concentric with the receptacle's axis of rotation. The size gradation within each bin is such that particles may be readily employed in the manufacture of glass spheres or in other industrial processes. See column 2, lines 1-12; note also column 2, lines 13-28.

It is noted that Cerbo is concerned with separating particles through use of centrifugal force and magnetic characteristics, particularly in connection with separations concerning industrial wastes such as finely divided siliceous slag (note column 1, lines 10-17 of Cerbo). In particular, Cerbo is concerned with particulates of different materials, and separating by different masses or by magnetic characteristics.

On the other hand, each of McKedy and of Otsuka, et al. is concerned with oxygen absorbent packets. In view of the different technologies involved in McKedy and Otsuka, et al., on the one hand, and in Cerbo, on the other, and different problems addressed by each, it is respectfully submitted that one of ordinary skill in the art concerned with in McKedy and in Otsuka, et al., would not have looked to the teachings of Cerbo. In other words, it is respectfully submitted that McKedy and Otsuka, et al. on the one hand, and Cerbo, on the other, are directed to non-analogous arts.

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Furthermore, particularly noting the differences in the technologies and in problems addressed by McKedy, Otsuka, et al. and Cerbo, it is respectfully submitted that one of ordinary skill in the art concerned with in McKedy, even in light of the teachings of Otsuka, et al., would not have been motivated to look to and incorporate therein the teachings of Cerbo.

In this regard, it is noted that the Examiner refers to differences in particulate size, with respect to the teachings of Cerbo. However, it is noted that Cerbo, primarily, refers to densities, noting that the density of the slag illustratively is of the order of about 2.5 while the ferrous material is substantially heavier and exhibits a density of about 7.5.

Moreover, it is respectfully submitted that, for example, Cerbo discloses separation of the ferrous material using magnetic characteristics, without separating the ferrous material into different sizes, while separating the crushed siliceous slag into different categories by differences in mass of the individual particles. Thus, it is respectfully submitted that one of ordinary skill in the art concerned with in separating ferrous material into different particulate sizes would not have looked to the teachings of Cerbo, which it does not separate the ferrous material based on size, and it is respectfully submitted that there would have been no motivation to separate and remove smaller granular iron powder (that is, the fine iron powder), in view of the teachings of Cerbo.

The contention by the Examiner that it would have been obvious to have used the three-sided automatic filling machine as described in Otsuka, et al., for packaging

the oxygen-absorbing composition of McKedy, is noted. It is respectfully submitted, however, that in using the three-sided filling-packaging machine, various problems arise in the filling as described in Applicants' specification, including particulate disadvantageously scattering and undesirably attaching to the outer surface of the packages and to a sealing portion of the bag opening. This problem was neither disclosed, nor would have been suggested, by the teachings of either of McKedy or Otsuka, et al., or any suggestions from the combination of the teachings of these references. Moreover, this problem of undesirable attachment of the iron-absorbing composition during filling using the three-sided automatic filling-packaging machine as in the present claims, is avoided through the procedure of the present claims, including removal of fine iron powder as recited in the present claims. Particularly, in view of advantages achieved by the present process, avoiding problems not even disclosed in the applied prior art, it is respectfully submitted that Applicants have established a basis for patentability of the presently claimed process.

Reference by the Examiner to Example 4 of McKedy as showing a composition including 0.34 grams of 100-mesh electrolytically reduced iron, is noted. This example does not disclose removal of small particulate, as in the present claims.

Moreover, it must be emphasized that the teachings of the references as a whole must be considered; and it is a simple fact that McKedy discloses that the particulate annealed electrolytically reduced iron which is used is most preferably about 200 mesh. See page 5, lines 15-19 of McKedy. McKedy clearly does not disclose, nor would have suggested, the problem addressed by the present invention, of attachment

of particulate using a three-sided automatic filling-packaging machine as recited in the present claims; even taking into account the combined teachings of McKedy and Otsuka, et al., the combined teachings of these references do not disclose, nor would have suggested, the problem addressed by Applicants, or solution thereto, including removal of the particulate of the most preferred size disclosed in McKedy. Thus, notwithstanding Example 4 of McKedy, it is respectfully submitted that, particularly in view of the problem addressed and solved according to the present invention, the combined teachings of the applied references would have neither disclosed nor would have suggested the presently claimed invention.

In view of the foregoing comments and amendments, it is respectfully requested that finality of the Office Action mailed March 6, 2003, be withdrawn, upon any indication of a basis for rejection of claim 9; and that upon further examination of the above-identified application, all claims remaining in the application be allowed.

In any event, entry of the present amendments, and reconsideration and allowance of all claims remaining in the application, are respectfully requested.

To the extent necessary, Applicants petition for an extension of time under 37 CFR § 1.136. Please charge any shortage in fees due in connection with the filing of

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this paper, including extension of time fees, to the Deposit Account No. 01-2135 (Case No. 396.39350X00), and please credit any excess fees to such Deposit Account.

Respectfully submitted,

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